

Title (en)  
VERTICAL BRANCHED GRAPHENE

Title (de)  
VERTIKALES VERZWEIGTES GRAPHEN

Title (fr)  
GRAPHÈNE RAMIFIÉ VERTICAL

Publication  
**EP 3931150 A4 20221207 (EN)**

Application  
**EP 20765703 A 20200228**

Priority  
• AU 2019900665 A 20190301  
• AU 2020050187 W 20200228

Abstract (en)  
[origin: WO2020176929A1] Provided are a method for preparing a vertical branched graphene comprising treating a pristine vertical graphene with an inert plasma in the absence of an introduced carbon source to develop a vertical branched graphene. The method may also include pre-treating a substrate surface with an inert plasma; depositing a pristine vertical graphene onto the substrate surface by contacting the substrate surface with a deposition plasma comprising a carbon source gas for a deposition period. Also provided are a vertical branched graphene attached to a substrate surface, the vertical branched graphene having a trunk portion extending from the substrate surface, said trunk possessing an increased degree of branching as the distance from the substrate surface increases; and a freestanding branched graphene with a proximal end and a distal end, the proximal end comprising a trunk portion, the trunk portion possessing an increased degree of branching as the distance from the proximal end increases and the distance to the distal end decreases.

IPC 8 full level  
**C01B 32/194** (2017.01); **B82Y 30/00** (2011.01); **B82Y 40/00** (2011.01); **C01B 32/18** (2017.01); **C01B 32/186** (2017.01); **C23C 16/02** (2006.01); **C23C 16/26** (2006.01); **C23C 16/44** (2006.01); **C23C 16/56** (2006.01); **C30B 25/00** (2006.01); **C30B 25/18** (2006.01); **C30B 29/02** (2006.01); **C30B 29/60** (2006.01); **C30B 33/12** (2006.01); **H01B 1/04** (2006.01); **H01B 13/00** (2006.01); **H01M 4/587** (2010.01)

CPC (source: AU EP US)  
**C01B 32/184** (2017.08 - US); **C01B 32/186** (2017.08 - EP US); **C01B 32/194** (2017.08 - AU EP US); **C23C 16/0245** (2013.01 - EP); **C23C 16/26** (2013.01 - EP US); **C23C 16/4418** (2013.01 - EP US); **C23C 16/50** (2013.01 - AU US); **C23C 16/56** (2013.01 - AU US); **C25B 1/02** (2013.01 - US); **C25B 3/07** (2021.01 - US); **C25B 3/26** (2021.01 - US); **C25B 11/065** (2021.01 - US); **C30B 25/00** (2013.01 - EP); **C30B 25/186** (2013.01 - EP); **C30B 29/02** (2013.01 - EP); **C30B 29/60** (2013.01 - EP); **C30B 33/12** (2013.01 - EP); **H01B 1/04** (2013.01 - AU EP US); **H01M 4/587** (2013.01 - EP); **H01M 4/625** (2013.01 - US); **B82Y 30/00** (2013.01 - AU EP); **B82Y 40/00** (2013.01 - AU EP); **C01B 32/18** (2017.08 - AU); **C01B 32/186** (2017.08 - AU); **C01B 2204/20** (2013.01 - EP); **C01B 2204/22** (2013.01 - EP); **C01B 2204/30** (2013.01 - EP); **C01B 2204/32** (2013.01 - AU); **C01P 2002/82** (2013.01 - US); **C01P 2002/85** (2013.01 - US); **C01P 2004/03** (2013.01 - US); **C01P 2006/40** (2013.01 - US); **H01G 11/34** (2013.01 - US); **H01M 4/9083** (2013.01 - AU); **Y02E 60/10** (2013.01 - EP); **Y02E 60/50** (2013.01 - EP)

Citation (search report)  
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• [Y] HAEJUNE KIM ET AL: "Straightforward fabrication of a highly branched graphene nanosheet array for a Li-ion battery anode", JOURNAL OF MATERIALS CHEMISTRY, vol. 22, no. 31, 25 June 2012 (2012-06-25), GB, pages 15514 - 15518, XP055736022, ISSN: 0959-9428, DOI: 10.1039/c2jm33150k  
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• See also references of WO 2020176929A1

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**WO 2020176929 A1 20200910**; AU 2020232976 A1 20210923; CN 113767065 A 20211207; EP 3931150 A1 20220105; EP 3931150 A4 20221207; US 2022056599 A1 20220224

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